TAKEN from: Remedial Action Master Plan SKINNER L.F. SITE 01-5V730 May 18 AR000015

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1.0 EXECUTIVE SUMMARY

This document is a Remedial Action Master Plan (RAMP) for the Skinner Landfill site located near West Chester, Ohio. A RAMP is a plan for undertaking remedial investigation activities and remedial actions in response to a hazardous substance release, or a substantial threat of release, into the environment. It is based upon the National Oil and Hazardous Substances Contingency Plan (NCP) promulgated by the Environmental Protection Agency (EPA) on July 16, 1982 (47 FR 31180-31243).

This document is based on readily available existing data. No new data were generated during preparation of this RAMP.

1.1 PURPOSE

The specific purpose of this RAMP is to define the scope of emedial investigation activities or remedial actions for the Skinner Landfill site along with a schedule of implementation. The RAMP provides cost estimates for each proposed activity and identifies data limitations, community relations strategies, and possible problems that may be encountered during project implementation.

1.2 SITE DESCRIPTION

Skinner Landfill is a 70-acre unpermitted sanitary landfill located 1 mile northeast of the Town of West Chester, Ohio. The surrounding area is primarily agricultural and wooded lands with a subdivision to the west. The site is owned by Mrs. Elsa Skinner. The site is not visible from the access point off of Cincinnati-Dayton Road.

3 PROBLEM STATEMENT

Industrial chemicals from the Chem-Dyne Corporation have reportedly been dumped in an old lagoon area in the landfill. The dumped material consists of drums, broken drums and free standing liquid. The lagoon area was covered with soil from the landfill in 1976 and the limits of the old chemical dump are not presently known. Samples of these chemicals were found to contain toxic concentrations of hazardous chemical substances. Groundwater contamination is a possibility.

Leachate has been reported seeping from the bank in the area of the old lagoon. Two streams flowing toward the Town of West Chester traverse the base of the landfill. Surface water contamination is a possibility.

Numerous storage tanks and 55-gallon drums are scattered throughout the landfill. The contents of these tanks and drums are unknown. During the site visit, instrument read-

EXHIBIT 1

ings in two of the tanks registered high concentrations of organics. It is not known if there are buried drums in areas other than the lagoon area.

Six standing water ponds lie along the western boundary of the landfill. Based on visual inspection, these ponds do not appear to be contaminated. Trucks have been seen backing up to these ponds indicating possible dumping.

1.4 LIMITATIONS

Limitations considered particularly relevant to the Skinner Landfill site follow.

1.4.1 Data Limitations

- The extent of the original lagoon (where chemical dumping occurred) is not defined.
- Results of the laboratory analyses of samples known to have been collected were not readily available at the time of RAMP preparation.
- Borings drilled in the lagoon area were too shallow for geologic analysis of subsurface conditions and soil materials. Boring elevations and locations were not recorded.
- The contents of the scattered drums and storage tanks onsite are unknown.
- The extent of seepage from these drums and tanks into the surface soils is unknown.
- No data were readily available to determine the water quality and potential sediment contamination for the six water ponds onsite and the two intermittent streams flowing around the base of the landfill.
- Only limited sample data were available for private wells in the area.
- Due to the size and complexity of the site layout, current aerial photography is needed for analysis of possible problem areas at the site.
- Due to the possibility of channelized groundwater flow, contaminated groundwater may be restricted to narrow zones. Additional monitoring wells are needed for further analysis.

- Topographic data are limited to USGS quadrangle maps of the area. These maps have a 10-foot contour interval where a smaller contour interval is needed for analysis of surface drainage and runoff.

1.4.2 Study Limitations

- The RAMP does not recommend specific remedial actions due to a lack of information necessary to conduct a feasibility study for them.

- Costs provided are Order-of-Magnitude only. This type of estimate is defined by the American Association of Cost Engineers as follows: "An approximate estimate made without detailed engineering data. Examples include: an estimate from cost-capacity curves, an estimate using scale-up or scale-down factors, and an approximate ratio estimate. It is expected that an estimate of this type will be accurate within +50 percent and -30 percent."

- The RAMP is basically a planning document with tasks and subtasks suggested as minimum efforts to accomplish its objectives.

- The RAMP budget and development schedule did not permit a complete and exhaustive consideration of all remedial planning activities.

1.5 INITIAL REMEDIAL MEASURES

The purpose of initial remedial measures (IRM's) at the Skinner Landfill site is to reduce imminent hazards to public health associated with the presence of hazardous wastes contained onsite.

The IRM's identified for the Skinner Landfill site are:

- Installing a gate and placement of warning signs
- Warning to people living in site area
- Issuance of an advisory notice

1.6 REMEDIAL INVESTIGATION/FEASIBILITY STUDY

Before alternatives for remedial actions can be analyzed, sufficient information must be available to evaluate them. Gathering of this information will be completed in a remedial investigation/feasibility study (RI/FS).

2.0 DATA EVALUATION

2.1 OBJECTIVE

This section presents available technical data and nontechnical information on the Skinner Landfill site and its immediate surroundings. It also summarizes potential impacts resulting from the landfill site contamination based on available information. Evaluation of readily available existing data determines data limitations and the need for remedial investigations and measures.

2.2 BACKGROUND

2.2.1 Site Description

The Skinner Landfill is a sanitary landfill located approximately 1 mile northeast of the Town of West Chester in Union Township, Butler County, Ohio (Figure 2-1). See Figure 2-2 for a location map of the landfill site. The landfill is approximately 50 feet higher than the surrounding terrain and consists of 50 to 70 acres of land; the boundaries are not clearly distinguishable by visual inspection. The initial owners of the landfill were Mr. and Mrs. Albert Skinner and their sons; the present owner is Elsa Skinner, wife of Albert Skinner. The property is bounded on the north and east by wooded land, the south by wooded and agricultural land, and on the west by the Cincinnati-Dayton Road and scattered single-family residences.

The entire site, including the presently used landfill area, is scattered with debris such as tires, wood, aerosol cans, numerous large tanks, engines, washers, and dryers.

Access to the site is obtained from the Cincinnati-Dayton Road. There is a complex pattern of trailways leading into and through the landfill. One residence is located in the landfill area itself. Refer to the site map (Figure 2-3) for a general layout of the area, and to the Site Visit Memorandum (Appendix A) for a summary of observations made during the RAMP site visit.

The site is hidden from the public community by the surrounding trees and other vegetation which appears to be normal and healthy. Trails leading to the six water ponds suggest possible dumping activities or usage of the water. Two intermittent drainages traverse the base of the landfill flowing southwest through the Town of West Chester where they meet to form the East Fork of Mill Creek.

2.2.2 Site History

From photo analysis, it appears that the land was originally used in the 1930's for the extraction of sand and gravel.

During the next several decades the Skinners accepted general municipal refuse. As early as 1964 hazardous waste was reportedly accepted at the landfill and cyanide was confirmed to have been disposed of at the site. In 1976, toxic chemicals from the Chem-Dyne Corp. were reportedly placed in the landfill.

The site was never permitted as a municipal landfill and is presently unpermitted. Application for a permit was made but never approved because the area had previously been zoned as a rural residential area. Because the landfill was not permitted, regular inspections were not conducted. Therefore, records concerning the landfill operation are scarce.

In 1977, the landfill operators were charged by Ohio EPA with improperly disposing of hazardous waste material at the site. Approximately 100 drums, allegedly containing industrial and chemical wastes, were photographed onsite. In a subsequent court case in which the Ohio EPA attempted to force the land owners to remove the drums, the presiding judge ruled that the Ohio EPA failed to present sufficient evidence that the drums posed a danger. The same judge did prohibit the landowners from using the facility for future disposal or storage of industrial wastes of any nature except under legal permit.

Another business activity was conducted onsite by John Skinner, son of the landfill owners. Beginning in the early 1960's, John Skinner worked for the Chem-Dyne Corporation (now in receivership), cleaning, washing and repairing Chem-Dyne equipment used to haul chemical wastes. This activity apparently began under the auspices of William Kovacs, a vice president of Chem-Dyne Corp. It is unknown when this business began or ended; however, in the court case referred to above, which was tried in October 1978, the presiding judge allowed this activity to continue.

2.2.3 Remedial Actions to Date

To date there have been no remedial actions taken to rectify the problems at the Skinner Landfill site.

2.2.4 Chronology

A chronology of the Skinner Landfill site is presented in Appendix B.

2.3 HAZARDOUS MATERIALS CHARACTERIZATION

2.3.1 Generators and Transporters

The possible generators and possible transporters of hazardous material to the Skinner Landfill and identified in

a report entitled "Skinner Landfill - Responsible Party Search" written in April 1983 under EPA Contract No. 68-01-6543.

2.3.2 Materials - Quantitative

Miscellaneous sampling of the materials at the Skinner Landfill has taken place to identify and quantify possible hazardous wastes present (Table 2-1).

The results from the analyses of many of these samples were nonexistent in the reference materials available for the preparation of this RAMP.

During a heated confrontation with authorities in May 1976, the Skinners reported the following materials to be buried in the landfill:

Nerve gas
Mustard gas
Incendiary bombs
Phosphorus
Flame throwers
Cyanide ash
Other explosive devices

A military unit was brought to the landfill under a search warrant and found no explosive devices. Cyanide ash, phosphorus, and several flame throwers with canisters were the only items from this list that were found onsite.

During the excavation of the lagoon area in 1976, seven samples were taken from 55-gallon drums and liquid ooze in the pit. Table 2-2 summarizes the results of the laboratory analysis of these samples.

2.3.3 Materials - Qualitative

From the ooze samples taken on May 11, 1976, the chemicals identified by the Gas Chromotograph - Mass Spectrophotometer process were:

- Trichloropropane
- Dichlorobenzene
- 1, 3 Hexachlorobutadiene (Aldrin Component)
- Naphthalene
- Hexachlorocyclopentadiene (C-56)
- Methyl Napthalene (Two Isomers)
- Iso-Butyl Benzolate
- HexachloroNor-Bornadine (Endrin Intermediate)
- Octachloro-cyclo-pentene
- Heptachlor-nor-borene
- Hexachlorbenzene

Table 2-1
SUMMARY OF SAMPLING EVENTS AT SKINNER LANDFILL
01-5V73.0

Sampling Date	Description of Materials Sampled	Sampling Agency
April 26, 1976	Surface puddles in lagoon area	Ohio EPA
May 3, 1976	Groundwater - private wells in the vicinity of the landfill	Ohio Department of Health
May 11, 1976	7 samples - pit ooze and barrel liquid in lagoon area	Ohio EPA
July 29, 1976	5 borings	H.C. Nutting for Albert Skinner
July 25, 1977	Leachate puddle and stream samples in lagoon area	Ohio EPA
July 27, 1982	4 monitoring wells installed for Mitre Program on 7/19/82	FIT/E&E

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Table 2-2
QUANTITATIVE RESULTS OF LABORATORY ANALYSIS
PIT OOZE AND BARREL LIQUID
SKINNER LANDFILL

Collection Date: May 11, 1976

Constitutent (All results in mg/l)	SAMPLE NUMBER				
	#13750	#13751	#13752	#13753	#13754
Cyanide	6.76	7.5	0.36	5.4	761
Cadmium	755	180	2.0	5.6	50
Chromium (total)	160	65	4.0	350	126
Lead (total)	1,050	285	--	1,370	554
Mercury (total)	0.047	0.0135	0.006	0.01	0.075
Zinc	480	165	20.0	420	325
Copper	185	129	2.1	269	1,840
Phenol	27.3	24	12.8	8.8	11.2

The above samples were tested at the U.S. EPA Cincinnati Lab.

	#13750	#13751
Cyanide	9.1	7.7

The sample above was tested at the ODH Lab.

Identification of samples

#13750 - Liquid in pit (black color)
#13751 - Liquid in pit (orange color)
#13752 - Barrel recovered from pit
#13753 - Barrel recovered from pit
#13754 - Barrel recovered from pit

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- o Chlordene
- o Methyl Benzyl Phenone
- o Octachlor penta fulvalene

The contents of the barrels sampled were found to include the following in varying amounts:

- o Cyanide
- o Cadmium
- o Chromium
- o Lead
- o Mercury
- o Zinc
- o Copper
- o Phenol

2.4 ENVIRONMENTAL SETTING

2.4.1 Physiography and Topography

Butler County is in the Central Till Plains section of the Central Lowland physiographic province. The topography of the county has been greatly influenced by Wisconsinan glaciation. Glacial erosion modified the bedrock, and the present surface relief generally conforms to this modified bedrock topography. The resulting physiographic features include gently rolling glacial uplands, glacial terraces and outwash plains.

The Skinner property is presently characterized by hummocky terrain resulting from sand and gravel mining. The site is situated on an elongated hill about 50 feet above the surrounding terrain (Figure 2-2).

2.4.2 Geology

Butler County lies over a gentle dome known as the Cincinnati arch. Bedrock under the county is primarily shale and limestone of Ordovician age. The bedrock structure has been eroded and buried under deposits from Wisconsinan glaciation.

The Town of West Chester appears to be situated over a narrow, preglacial bedrock valley (St. John, 1981). This valley, which trends northeast-southwest, is filled with clay, sand and gravel. The Skinner property appears to be located on areas covered by several feet of sand and gravel and other areas where glacial till is thin over shale and limestone.

Topographic and Soil Conservation Services maps indicate that sand and gravel have been mined on the Skinner property. Wells near the site (wells 11, 12, 13 in Figure 2-4 and Table 2-3) encountered shale bedrock at depths of 6, 8 and 20 feet.

LEGEND

- ● RESIDENTIAL WELL LOCATION
- ▲ STREAM SAMPLING POINT

SOURCE: U.S.G.S. 7.5' GLENDALE, OHIO QUADRANGLE.

FIGURE 2-4
LOCATION OF KNOWN RESIDENTIAL WELLS
SKINNER LANDFILL

Table 2-3
RESIDENTIAL WELL LOGS

1. Tom Hancock - sampled 5/3/76
   0-5' topsoil
   5-17' sand and clay
   17-60' rock
   Static level - 15 feet
   Water at 15 feet
   3 gpm

2. Russell Klein
   0-35.5' clay
   35.5-104' limestone
   Static level - 38 feet

3. Ronald Harper
   0-40' clay
   40-75' gravel
   75-90' gray shale

4. Lee Ball
   0-42' clay
   42-80' gravel
   80-96' clay
   96-130' gray shale
   130-150' gray limestone
   Static level - 110 feet
   Casting set into shale

5. Joseph
   0-10' clay
   10-30' gravel
   42-50' gravel
   Static level - 26 feet

6. Williams
   0-3' topsoil
   3-16' yellow clay
   16-20' sand and clay
   20-31' gravel and clay
   31-34' sandstone (?)
   Static level - 17 feet

7. James Riesenberg
   0-46' sandy clay
   46-50' sand and gravel
   10 gpm

8. Cecil Faber
   0-7' topsoil
   7-75' sand and gravel
   water at 55'

9. Presbyterian Church
   0-18 clay
   18-22 sand
   22-59 clay
   Static level - 10 feet

10. Kenneth Joseph
    0-5' clay
    5-20' creek gravel
    20-45' clay
    45-52' creek gravel
    52-54 sandstone (?)

11. West
    0-6' clay
    6-58' shale

12. Sears
    0-6' clay
    8-100' shale

13. Needham
    0-20' clay
    20-75' rock
    Static level - 30 feet

14. Douglas
    8819 Cin-Day Road
    Sampled 5/3/76
    Source: Hosler/1982

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Two borings near the lagoon (B-5 and B-8 in Figure 2-5 and Appendix C) encountered shale at depths of 14.5 and 15 feet. Elevations of several borings drilled near the lagoon were not available for constructing profiles; however, it appears that a continuous clay layer under the lagoon does not exist. These borings encountered layers of silt, clay, and sand and gravel, typically found in glaciated areas.

2.4.3 Hydrology

Surface drainage from Butler County reaches the Ohio River via the Great Miami River, Mill Creek, and Muddy and Little Muddy Creeks. Runoff from the Skinner site drains to the southwest into the East Fork of Mill Creek. Mill Creek flows south-southwest through Cincinnati before reaching the Ohio River.

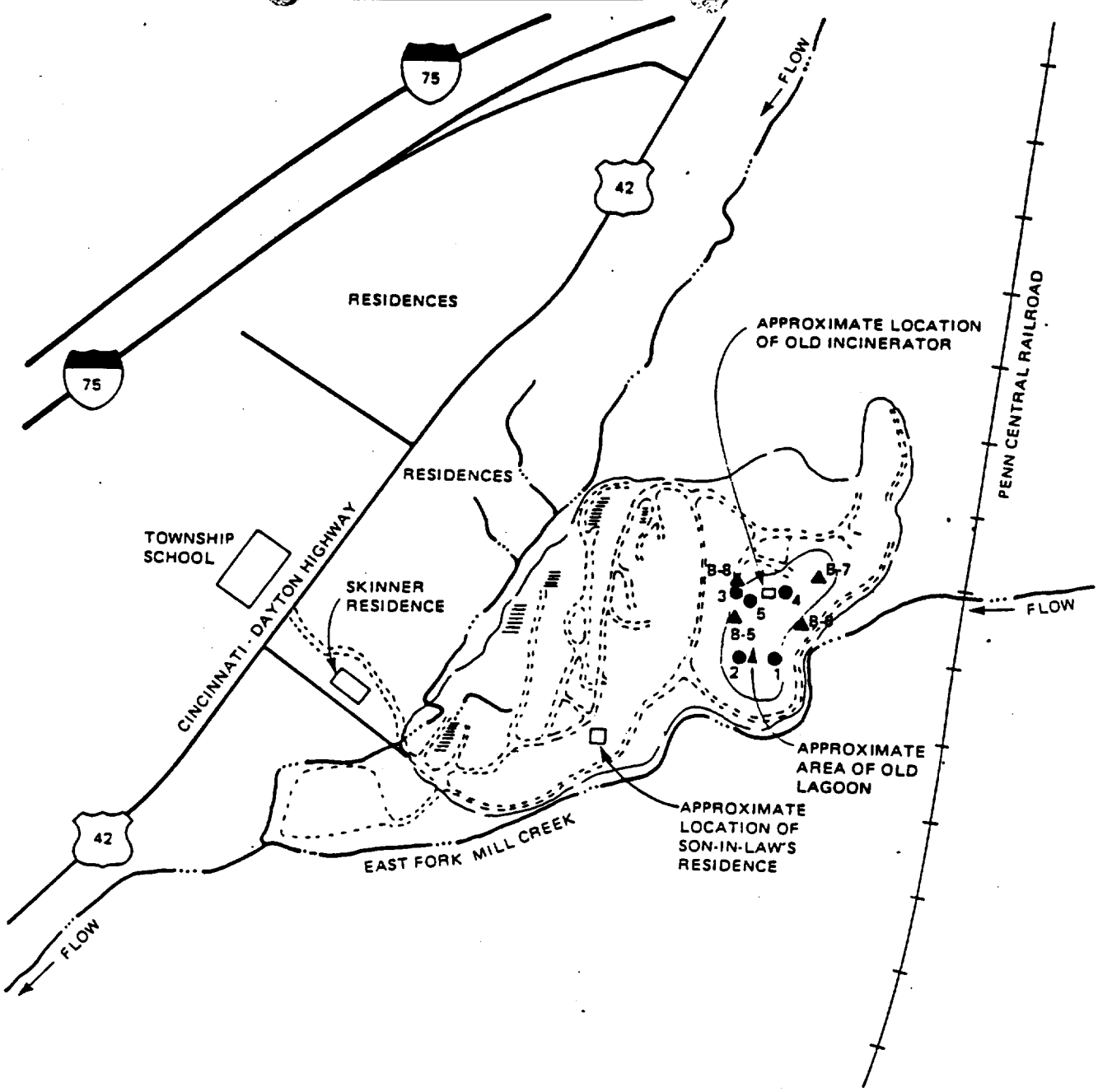
Because of excavations for sand and gravel and regrading for landfill operations, the surface drainage patterns are greatly changed from their natural patterns. There are bodies of ponded water along the western side of the site. Two intermittent streams flow southwest along the base of the landfill through the Town of West Chester where they meet to form the East Fork of Mill Creek.

During a site visit inspection by Joe Moore, Ken Harsh and Jim Pennino of the Ohio EPA on July 25, 1977, leachate was observed seeping from the vicinity of the buried lagoon. The inspectors also observed drums filled with a white, semisolid material stacked near the creek. Some of the drums were leaking and draining into a nearby creek. Water samples were taken of the stream and leachate seep and a sample of the white solid material was also collected. Published results from the laboratory analysis of the leachate puddle were available (Table 2-4); however, no other data were available regarding the other samples taken.

2.4.4 Geohydrology

Groundwater supplies in Butler County are primarily obtained from wells established in glacial drift. The underlying shale and limestone have low yields of brackish and highly mineralized water (Klair and Thompson, 1948). Wells in West Chester appear to be exceptions to this norm. Nine of thirteen well logs from the town indicate that the wells are completed in rock. Static water levels in these wells are generally above the top of rock.

Unconsolidated fill in the buried valley under West Chester constitutes a high yielding aquifer that is used by many local residents. Groundwater movement is probably to the southwest, along the strike of the buried valley discussed in Section 2.4.2 (St. John, 1981).



LEGEND

- LANDFILL BOUNDARY
- STANDING WATER PONDS
- ▲ BORINGS DRILLED BY ATEC FOR E&E
- ● BORINGS DRILLED BY H. C. NUTTING FOR ALBERT SKINNER

N

0 1000

500

SCALE IN FEET

FIGURE 2-5
APPROXIMATE LOCATION OF BORINGS DRILLED IN LAGOON AREA
SKINNER LANDFILL

Table 2-4
LEACHATE PUDDLE

Sample Date: July 25, 1977

Compound	Concentration (mg/l)
Chloride	9,600
Cadmium	598
Chromium	120
Copper	260
Lead	55
Mercury	$ 1
Zinc	240
Phenols	$ 2

Arsenic levels could not be verified because of interference by dilution.

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Table 2-5
GROUNDWATER ANALYSES (mg/l)
SKINNER LANDFILL

LOCATION: / DATE:	Well B-5 07/27/82	Well B-6 07/27/82	Blank 07/27/82	Douglas Residence 05/03/76	Hancock Residence 05/03/76	EPA Water Quality Criteria
Silver (Ag)	0.030	0.012	ND			0.05
Aluminum (Al)	0.53	16	ND			--
Barium (Ba)	0.35	0.48	ND	< 0.20	.020	1
Beryllium (Be)	ND	ND	ND			--
*Chromium (Cr)	0.055	0.045	ND	< 0.03	< 0.03	0.50
Cobalt (Co)	0.31	0.19	ND			--
*Copper (Cu)	ND	0.065	ND	< 0.03	< 0.03	--
Iron (Fe)	8.7	55	0.22	< 0.03	0.14	--
Manganese (Mn)	18	7.6	0.035			--
*Nickel (Ni)	0.41	0.30	ND	< 0.1	< 0.1	13.4
Vanadium (V)	ND	ND	ND			--
*Zinc (Zn)	0.41	0.39	0.040	0.27	0.70	--
*Arsenic (As)	ND	0.018	ND	< 0.01	< 0.01	0.05
*Cadmium (Cd)	0.064	0.032	0.001	< 0.01	< 0.01	0.010
*Mercury (Hg)	ND	0.00033	ND	< 0.005	< 0.005	0.002
*Lead (Pb)	0.54	0.023	ND	< 0.01	< 0.01	0.050
Selenium (Se)	0.011	ND	ND			0.01
Antimony (Sb)	ND	ND	ND			--
Tin (Sn)	ND	ND	ND			--
Thallium (Te)	ND	ND	ND			--
Cyanide	ND	ND	ND	< .01	< .01	--
Calcium Carbonate				374	366	--
Sulfate				81	52	--
Chloride				42	10	--
Phenols				< 2	< 2	--

ND = Not detected.
* = Priority pollutant.
-- = No criteria set.

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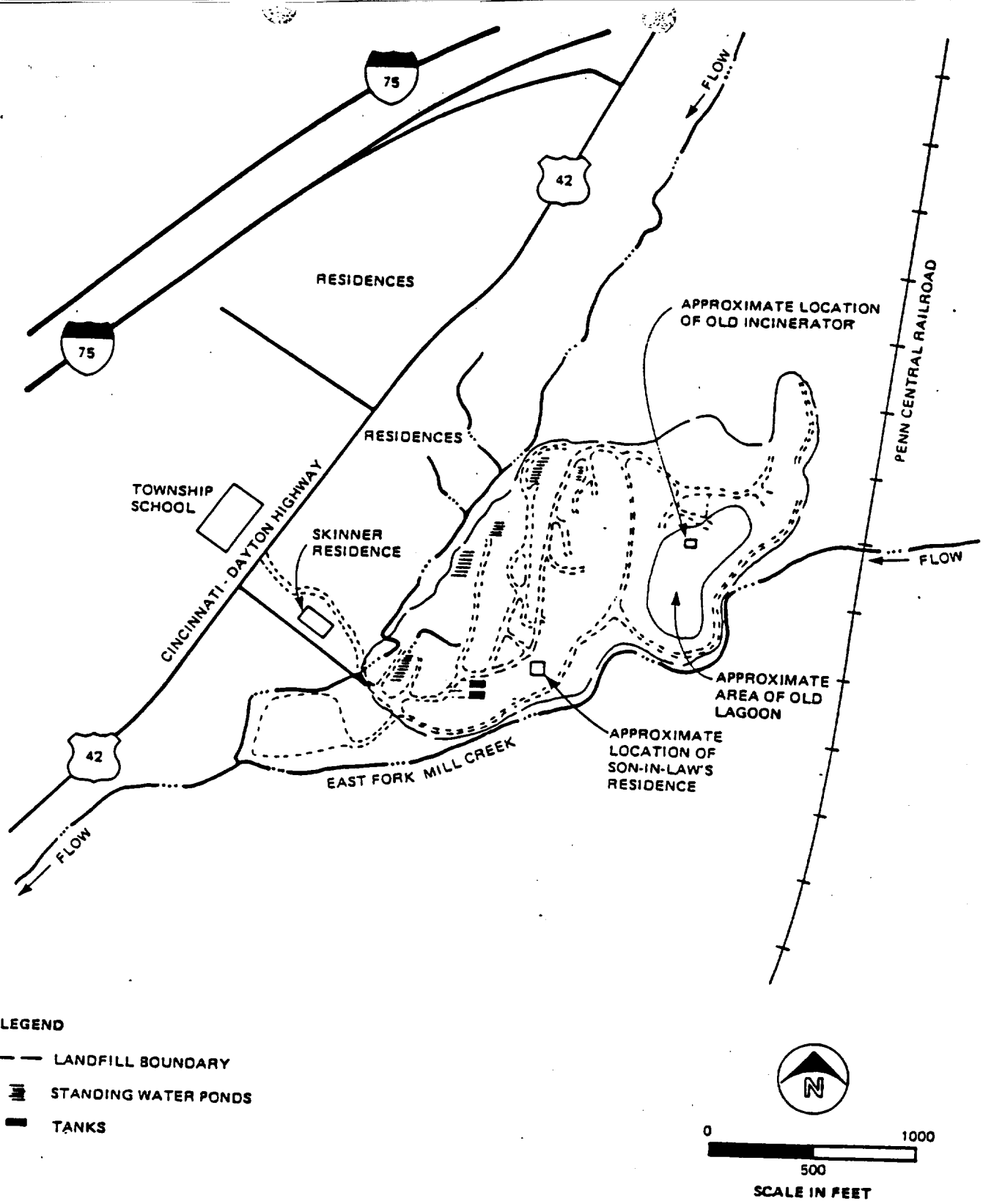

FIGURE 2-6
APPROXIMATE LOCATION OF BULK TANKS CONTAINING DETECTED ORGANICS
SKINNER LANDFILL

inated. Leachate from the landfill may also be reaching the streams. These streams feed Mill Creek, which flows to the Ohio River through Cincinnati, and provide recharge to the shallow, unconsolidated aquifer used by some residents of West Chester.

Incomplete combustion of some of the materials on the site could cause a public health hazard in the event of a fire. It appears that the Skinners are no longer burning material on their property, but the possibility of accidental fires should be considered.

2.5.2 Environment

Pollutants from the Skinner Landfill could affect terrestrial and aquatic life on and off the site. Runoff from rainfall or snowmelt could transport contaminants to the ponds onsite and to the streams surrounding the site. Many of the hazardous materials that may be on the site can bioaccumulate in the food chain. They may not be at toxic concentrations in the water, but could be found in the tissues of receptor organisms in concentrations high enough to cause toxicity. This could lead to human health concerns if the organisms, such as fish, are eaten.

Other wildlife of concern could include resident and migrating birds, as well as larger animals, such as deer. Bioaccumulation of hazardous materials can lead to reproductive failure or acute or chronic toxicity.

2.5.3 Socioeconomics

The presence of hazardous wastes near homes that depend on a potable aquifer and in a growing residential area may affect the socioeconomic balance of the area. The newer subdivisions in the area are home to a transient community dependent upon selling their homes when their companies transfer them. The knowledge that a hazardous waste site is in the area may cause a decline in area growth and reduced property values.

2.6 DATA LIMITATIONS

Data used in the preparation of this RAMP were taken from available known sources, including, but not limited to, the following:

- EPA files
- Other state and local files
- Site visit inspection
- General conversations with persons at the site and/or conversations with personnel having knowledge of the site.

The data compiled from the above are limited in the following regard:

- The lagoon area containing known toxic wastes is not clearly identifiable in the existing documents. Therefore, the area of buried drums where samples were taken in 1976 is only approximate (Figure 2-7).

- There were 55-gallon drums (estimate 250) and storage tanks (estimate 60) visible throughout the entire site. There is no information as to the materials (if any) stored in these drums. During the initial RAMP site visit, two of the tanks tested showed high levels of organics. There is no information as to what is buried (drums, split drums, tanks) in the landfill.

- The extent of seepage from these drums and tanks onto the surface soils is unknown.

- There are two intermittent streams traversing the base of the landfill area. Results were not available for water chemistry or organic analysis of any samples taken. Possible groundwater contamination is the major concern regarding the Skinner Landfill site.

- Nine borings have been drilled near the old lagoon area. These were relatively shallow borings and more information is needed for geologic analysis. The exact locations and elevations of these nine borings cannot be determined from the existing information.

- There is no record of any soil samples taken in the area of the chemical dump or any other portion of the landfill area.

- Only limited sample data were readily available for private wells in the area.

- Current aerial photography is needed for analysis of materials and possible problem areas at the site.

- Topographic data are limited to USGS quadrangle maps of the area. These maps have a 10-foot contour interval while a smaller contour interval is needed for analysis of surface drainage and runoff.

- No water quality or sediment data were readily available for the six ponds.

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